The Center for Information Management

Program Status Review

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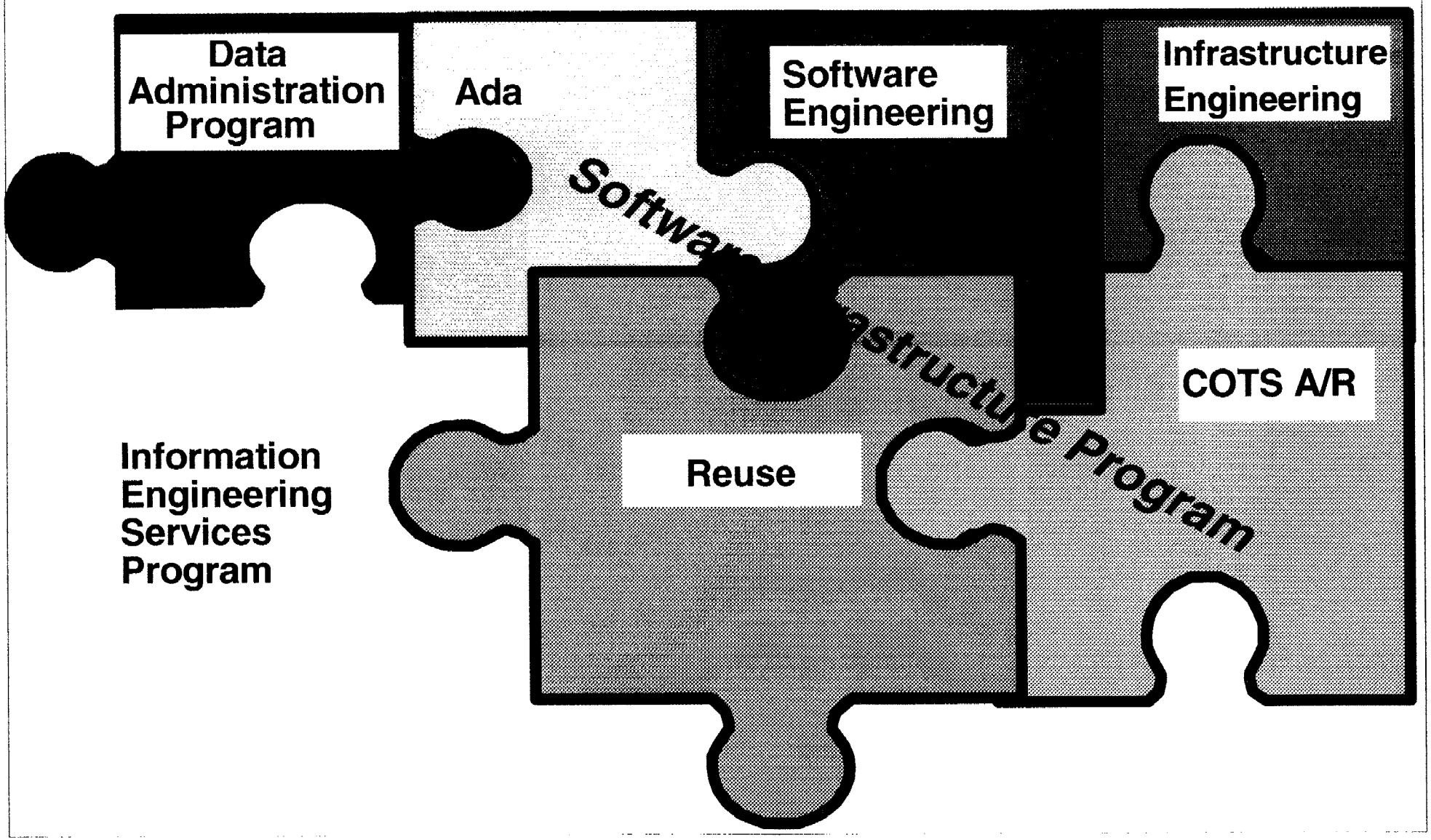
CENTER FOR INFORMATION MANAGEMENT

CIM



Good Morning. I am pleased to be with you today to share another program in our Center. The software infrastructure is a critical enabling foundation for DoD information management and an integral part of the Defense Information Infrastructure (DII).

The CIM Software Infrastructure Program consists of the following main focus areas: Software Engineering; Reuse, to include the DISA Software Reuse Program and the DoD Software Reuse Initiative (SRI); Ada, to include the Ada Dual-Use Initiative and the Ada Joint Program Office (AJPO); and COTS Aquisition/Reuse, which includes Commercial-Off-The-Shelf Software Acquisition and Reuse and Enterprise Licensing. The Software Engineering area encompasses tools, methods, and training for making improvements in the software development/maintenance lifecycle, to include Software Process Assessments (SPA), Software Process Improvements (SPI), reengineering, Object Oriented Technology (OOT), metrics, Software Engineering Environments (SEE), and organization change management. The reuse area provides software reuse technologies, tools, and training in the Defense Software Repository System (DSRS), domain engineering, Software Reuse Support Centers, as well as providing DoD coordination and management of reuse solutions. The Ada area promulgates the training, utilization, and development of Ada solutions, coordinating with DoD, federal government, industry, and academia. The COTS area includes the development of DoD-wide enterprise licenses and the management and redistribution of both government and commercial software assets.

The software infrastructure improvement programs are critical to both the DoD and to the success of DISA as it undertakes major projects such as GCCS, DII, and Enterprise Integration.

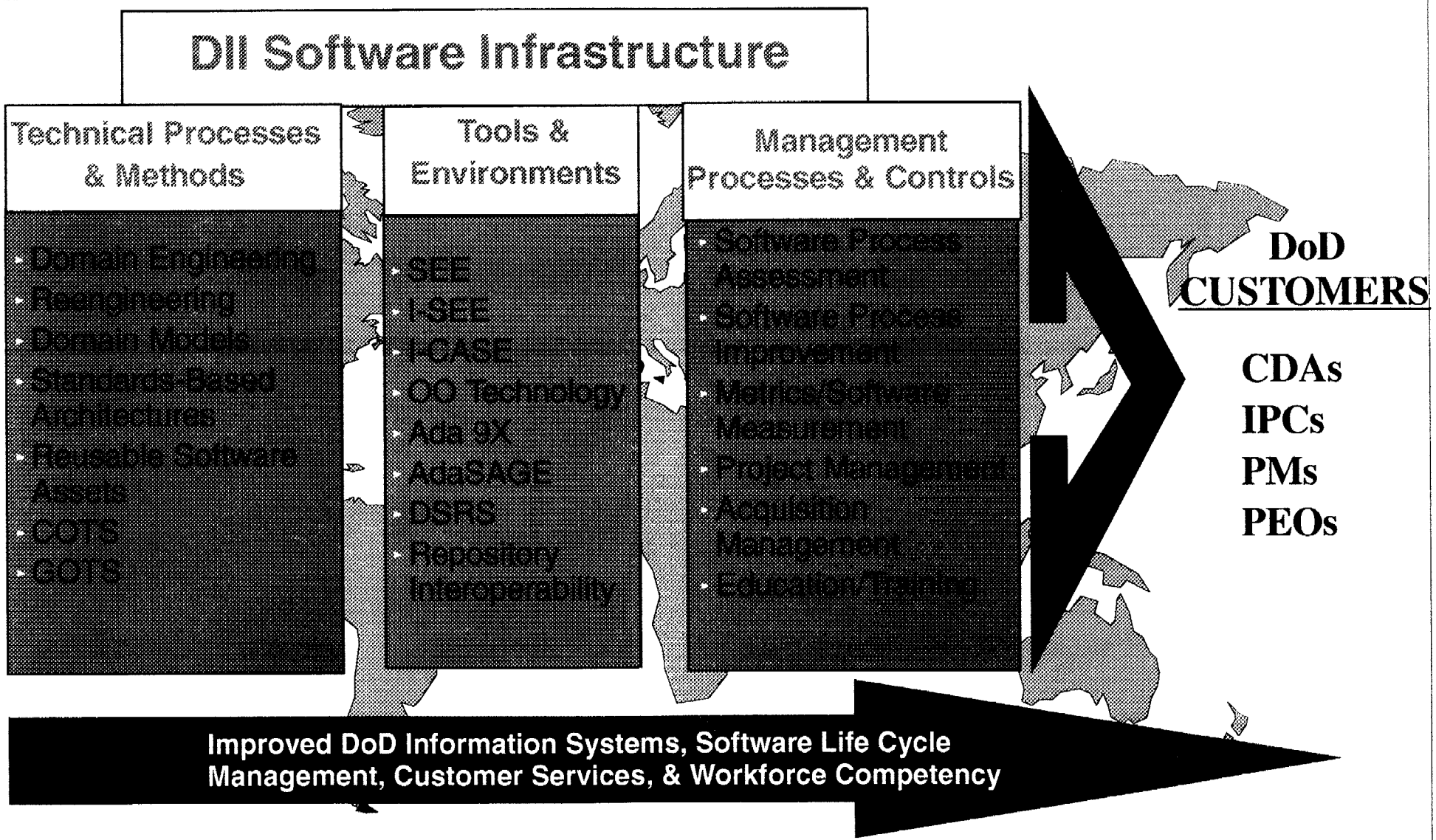
SOFTWARE INFRASTRUCTURE REQUIREMENTS

- **Mission:** Develop the software infrastructure as an integral part of a high-quality DII
- **Charter:** ASD(C3I) (May 91), ITPB 91-32, ITPB 91-44, HAC Software Reuse Report (Nov 93)
- **Products/Services:** Software Engineering Assistance; Software Process Assessment; Software Process Improvement; Applied Software Engineering Projects; Software Methods and Tools; Measurements; Ada9X; Defense Software Repository Operations, Assets, and Assistance; DoD Enterprise Licenses; Reusable Models, Designs and Applications (GOTS and COTS); Software Redistribution
- **Customers:** Central Design Activities (CDAs), DoD Software Developers and Maintainers, Program Executive Officers, Program Managers, Information Processing Centers, NATO, Foreign Allies, Other Government Agencies, Dual-Use Partners

The CIM Software Infrastructure Program mission is to develop the software infrastructure for the Department of Defense, providing the foundation for a high-quality Defense Information Infrastructure (DII). The program requirements have been in place since November 1990 when the SECDEF chartered the Corporate Information Management Initiative. The ASD(C3I) tasked DISA/CIM to support this requirement, and further Information Technology Policy Board Reports 91-32 and 91-44 gave detailed guidance on transitioning specific software reuse programs.

The products and services provided by the CIM Software Infrastructure Program span the software develoment and maintenance lifecycle. They are focused on supporting DoD customers tasked with developing and maintaining applications software. The Software Infrastructure Program provides customer assistance in software engineering, software process assessment, software process improvement, domain engineering, and the application of software processes, methods, and tools, to include Ada9X and the Defense Software Repository System (DSRS). It assists customers in the development and use of reusable models, designs, and applications (both GOTS and COTS).

SOFTWARE INFRASTRUCTURE PROGRAM



The CIM Software Infrastructure Program is an integral part of the Defense Information Infrastructure (DII). The DII is the shared or interconnected system of computers, communications, data, applications, security, people, training, and other support structure, serving the DoD's local and worldwide information needs. The infrastructure provides DoD customers the framework from which to effectively develop, manage, and maintain information systems. The infrastructure provides three main areas of support: 1) technical processes and methods 2) tools and environments, and 3) management processes and controls.

As we move our legacy systems toward migration status and to their final target environments, we must remain vigilant in the pursuit of total quality systems development. The DII Software Infrastructure will provide state-of-the-art technologies, tools, environments, and management solutions to support this effort. Specific products and services in each area form the building blocks for mission success. Technical processes and methods include domain engineering, reengineering, object oriented technology, standards-based architectures, reusable software assets, and both commercial and government software. Tools and environments to execute the processes include the Software Engineering Environment (SEE), Intelligent-SEE, I-CASE, Object Oriented Technology (OOT), Ada9X, AdaSAGE, the Defense Software Repository System (DSRS), and repository interoperability. Management processes and controls include Software Processes Assessments (SPA), Software Process Improvement (SPI), metrics, project and acquisition management, and education and training.

DISA/CIM has built a cadre of customers over the last few years. The Software Infrastructure Program supports application of software technologies through the execution of numerous pilot projects, training and workshop sessions, and site-specific customer support. Working together, we can help the DoD improve their software processes and develop the best possible products for our warfighters.

CRITICAL AREAS

Last	Current				Forecast			
	SE	Reuse	Ada	COTS A/R	SE	Reuse	Ada	COTS A/R
Customer Satisfaction	●	●	●					
Schedule	●	●	●	●				
Funding	●	●	●	●	◐	◐	●	◐
Staffing	●	●	●	●	◐	◐	●	●
Contract Status	●	●	●	●	●	●	●	●
Supportability	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Readiness	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Training	●	●						
Security	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Interdependencies				●				●

Key:
- SE : Software Engineering Improvements
- Reuse : The DISA Software Reuse Program and the DoD Software Reuse Initiative
- Ada : The Ada Dual-Use Initiative and the Ada Joint Program Office
- COTS A/R: Commercial-Off-The-Shelf Software Reuse and Aquisition (including Enterprise Licensing)

This slide provides both a current and forecasted status for each critical area of the CIM Software Program. Where you see a predominant color in front, with a background color behind, those areas are on the verge of change. Status is shown individually for each major area of the program: Software Engineering, Reuse, Ada, and COTS A/R. Currently, most areas of the program are moving forward on target. However, you will see many critical areas identified as amber or red in the forecasted status. The majority of these potential problems deal with the uncertainty of future funding and staffing to properly execute the Software Program mission. If cuts in these areas fall short of program requirements, across-the-board impacts will negatively affect customer satisfaction, schedule, and training. I will discuss the critical areas of concern in detailed issue slides further in this briefing.

MILESTONES

Software Engineering

Software Process Assessments
I-CASE Pilot Projects
Re-engineering/OOT Projects
Metrics Projects
GCCS Support
DII Support

Reuse

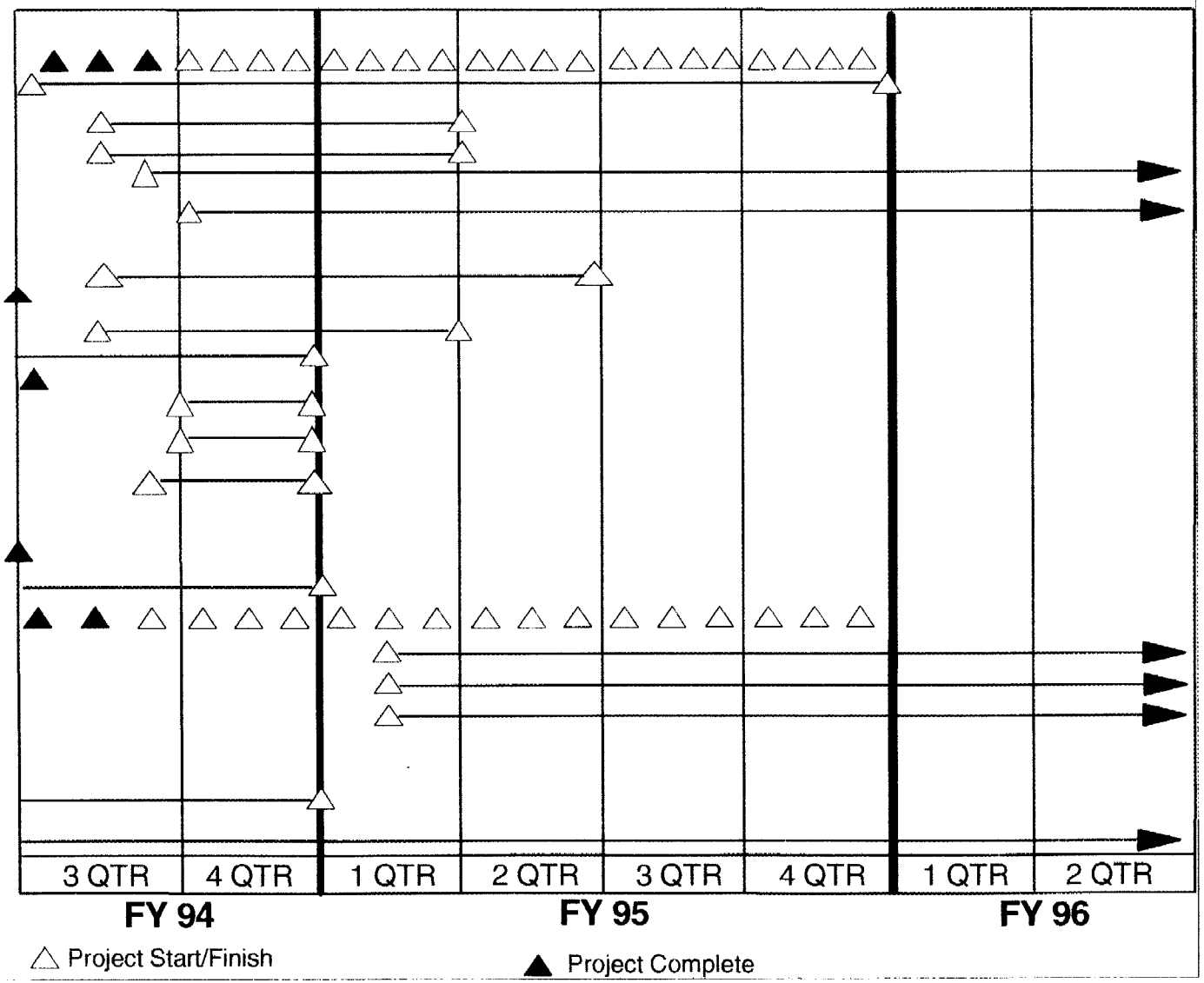
Domain Engineering Projects
Software Reuse Report
SRSC Reuse Projects
DoD SRI Program Plan
DSRS V5.1/Interoperability
DoD SRI Strategic Plan/Imp
SRSC DSRS V5.1 Installation
DSRS Migration Plan/Security Accreditation

Ada

Ada Dual-Use Plan
Ada 9X Trans Plan/ Handbook
Ada 9X Training
SBIS Support
JAST Support
Dual-Use Partners' Support

COTS Acquisition & Reuse

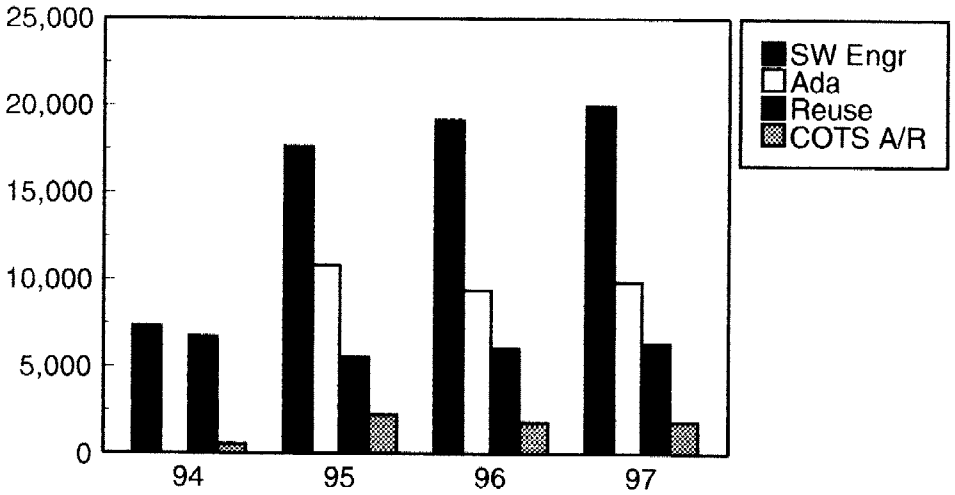
DoD Enterprise Software License Contract Award
COTS Redistribution



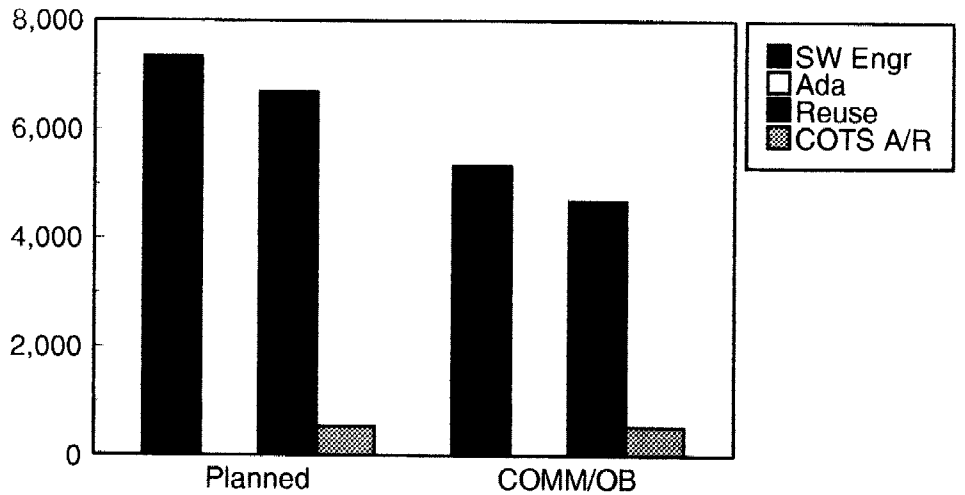
This chart depicts a high level look at the many activities ongoing within the DISA software program. Throughout Software Engineering, Reuse, Ada, and COTS, the focus is on working with DoD customers in the application of new technology. The Software Process Improvement program reports 32 software development customers and recently conducted an assessment at the first DoD organization to achieve level 3 on the Software Capability Maturity Model. We are on the leading edge in technologies such as Object Oriented and have successfully reengineered a legacy systems from COBOL to Ada reducing its size by 1/3. Congress recently endorsed the Reuse Program and encouraged the Department to continue with this high visibility, high payback program. Industry has formed a partnership with the DoD to get Ada use expanded and significant progress has been made in enterprise licensing for COTS. In addition, extractions from our COTS reuse repository (DARIC) continue to run high (4,000 last quarter).

STATUS OF FUNDS

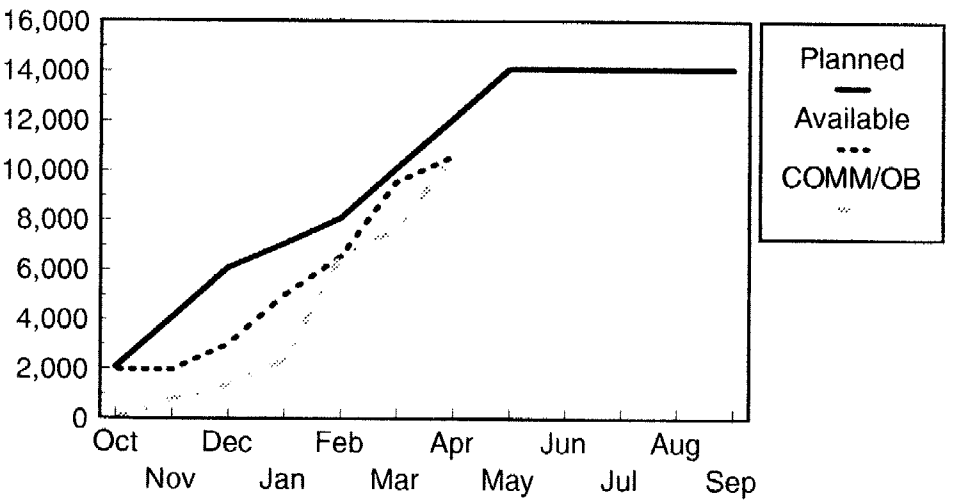
Funding History



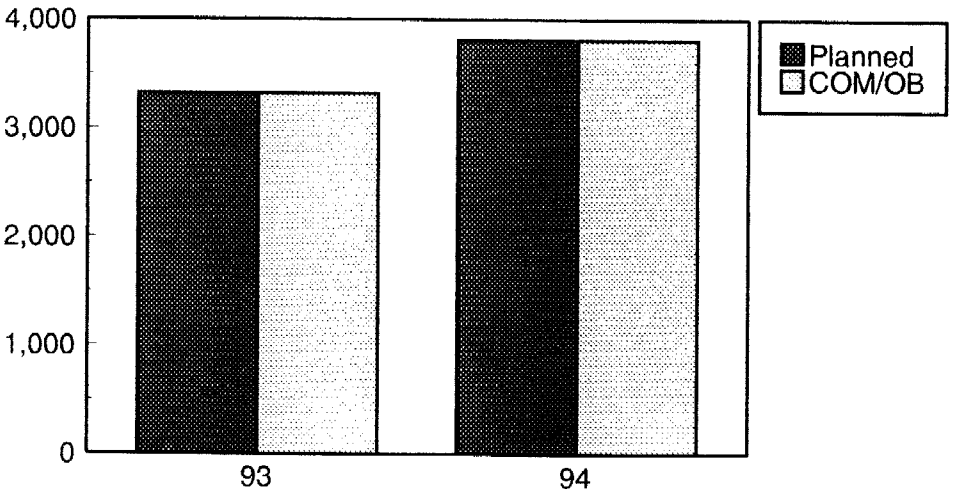
FY 94 Commitement/Obligation Rate - O&M



FY 94 Actual Commitment/Obligation



FY 93/94 Commitment/Obligation - Procurement



This slide provides a look at the Software Program funding status.

The first graph depicts the funding history for each of the four program areas. Software Engineering will increase from 7.3 million in FY94 to 20.0 million in FY97. The Ada program transfered to DISA in FY94 with a suballocation of funds. Funding will be appropriated to the agency in FY95 (10.8 million), with a slight decrease to 10.0 million in FY97. Reuse funding is shown at 6.7 million in FY94, decreasing slightly to 6.3 million in FY97. COTS will grow from .5 million in FY94 to 1.8 million in FY97.

The bottom left graph depicts FY94 actual commitments and obligations, while the two charts on the right show the break out between operations and maintenance and procurement funding. The original funding plan was to obligate 100% of program funds not later than 30 May 94. Meeting this goal is not possible since we have been receiving incremental funding, however all available funds received to date have been processed.

PRIOR TASKINGS

No prior taskings at this time

There are no prior taskings at this time.

ISSUE

- **Description**: Software Infrastructure Program low prioritization
- **Discussion**: Software in Bands 4 and 5 results in severe program cuts
- **Impact**:
  - Loss of core competency
  - Inability to satisfy customers, many of which are outside of DISA and DoD
  - Severe credibility problems in DoD and with Congress
  - Potential loss of support for key DISA programs because of lack of software skills
- **Recommendation**:
  - Develop software strategy for DISA
  - Use it to get GCCS well
  - Put software in Band 1
- **Get Well Date**: 6 months

Although funding cuts have been made throughout all DISA activities, the software program has been hit exceptionally hard and continues to be prioritized at low levels. Software activities were placed in Bands 4 and 5 during the 94 prioritization, and a critical, in-demand program, Software Process Improvement (SPI), is scheduled for cancellation in the 96 FYCP. The SPI program is one of our leading candidates for fee-for-service because of the high customer demand.

All programs have been affected, and without DISA commitment to increase resources in the future, products, services, and customers will be significantly cut. Diminished support will affect DoD schedules, training, and customer satisfaction. Planned pilot projects and customer assistance in the areas of domain engineering, Software Process Assessments, I-CASE Pilot Software Engineering Environment Evaluations, Ada, metrics collection, and software reuse assistance will be reevaluated and many eliminated. Fewer support projects will delay the time when we develop and maintain reusable software architectures, and metrics collection will not give us the data needed for software process improvements if the data cannot be collected and processed. Most importantly, DISA customers are looking to us to provide information systems engineering solutions and we must not let them down. DISA commitment to adequately resource the Software Program is needed to continue building the software infrastructure for the DII.

ISSUE

- **Description**: Software Infrastructure not an explicit part of DII Strategic Plan
- **Discusstion**: DII will fail without a coherent software strategy
- **Impact**:
  - Inability to use COTS
  - Inability to reengineer existing applications
  - Inability to provide client-server services
  - Inability to deliver an acceptable product (one that satisfies user requirements and works) on-time and within budget
- **Recommendation**:
  - Develop software strategy for DISA
  - Use it as integral part of DII execution
- **Get Well Date**: 6 months

Software is an integral part of the Defense Information Infrastructure. The success of the DII is highly dependent on the software produced to support it. Well engineered software saves time in its development, lowers cost through the reuse of components, and provides high payback through system longevity. Without quality software, the DII will fail. It is imperative that software be given proper attention in the DII Strategic Plan.

MAJOR ACCOMPLISHMENTS

Software Engineering

- Initiated Partnership projects with Quantico, DLA/Columbus, and Gunter AFB Central Design Activities (CDA) to apply CIM products
- Completed 12 SPA and post-SPA activities
- Led first DoD Level 3 SPA at Fort Lee, VA
- Conducted 12 Software Process Maturity Model Training Classes
- Conducted I-CASE Pilot Preparation Workshops
- Awarded I-CASE to Logicon/Completed 2 I-CASE Pilot SEE Evaluations
- Completed I-CASE Metrics Implementation Plan
- Collected/reported core measure metrics from 20 DoD projects at 9 CDAs

Reuse

- Establishing new and improved DoD SRI with approval from Congress
- Staffed draft SRI Charter through Reuse Executive Steering Committee
- Installed DSRS V5.0 at 7 SRSCs, providing homogeneous interoperability
- Validated Procurement Solicitation/Award Domain Models
- Completed DoD SRI Technology Roadmap V1.2
- Held Domain Engineering, Re-engineering, and Metrics Workshops

MAJOR ACCOMPLISHMENTS

(Continued)

Ada

- Transferred Ada Joint Program Office (AJPO) to DISA
- Held Ada Dual-Use Executive Steering Committee Meeting
- Completed Ada Dual-Use Program Plan

COTS/AR

- Reported 8000 new software items valued at 1.2M
- Redistributed 1000 software items valued at 162K
- Completed DoD Enterprise License Alternative Analysis Phase II
- Completed DoD Enterprise License contract package
- Completed DISO data collection

In spite of resource constraints, DISA software engineers have been very active and producing results. CIM software engineering products will be applied to the migration of systems being maintained at Quantico, DLA/Columbus, and Gunter. Two program plans are being written for each project. One will collect metrics and report savings on the project. The other will evaluate the corporate impact by evaluating contributions to the DoD as a whole. I-CASE Pilot Site Preparation Workshops were conducted. I-CASE has been awarded and the first engineering environment evaluations are underway with deliveries expected to begin in July.

In response to Congress, the DoD Software Reuse Initiative has been formalized and will take the successes and continue to institutionalize reuse throughout the DoD. The new charter has been distributed to the Reuse Executive Steering Committee (RESC) for comment. We now have homogenous interoperability at all Defense Software Repository System sites, meaning sites may electronically exchange reusable components. The first domain models were validated by a council of procurement officials.

The Ada Joint Program Office has been successfully transitioned to DISA and the Ada Dual Use Program Plan is in coordination.

Activity remains high at DARIC. Many new COTS items have been added and over 1000 redistributed at a value of $162,000.

PROJECTED ACCOMPLISHMENTS

Software Strategy

- Define software strategy for DISA
- Realign efforts to make it happen
- Focus results on GCCS and DII
- Raise level of CDAs from 1 to 3 in 3 years

Software Engineering

- Establish partners program with GCCS
- Transfer needed software technology
- Demonstrate improvements incrementally
- Show ROI and help generate results

Software Reuse

- Institutionalize reuse in DoD and DISA
- Use reuse on GCSS and DII to reduce cost

PROJECTED ACCOMPLISHMENTS

(Continued)

Ada

- Launch Ada9X in March 1995 successfully
- Increase commercial use of Ada
- Make Ada the language of choice in DoD
- Show DoD that DISA can manage program

COTS/AR

- Award DoD Enterprise software licenses
- Put DISA in position to out-source

Software Reuse

- Demonstrate next generation I-CASE environment
- Integrate repositories and develop glue interfaces
- Get ready for the future

This slide provides a high-level look at the Software Infrastructure Program's projected accomplishments. A software strategy for DISA will be developed, with a focus on GCCS and DII results. One goal in this area is to raise the level of CDAs from 1 to 3 within 3 years. A Process Action Team (PAT) has been formed to assist both GCCS and the DII programs with their software engineering requirements. A GCCS partners program will be established to ensure software technology transfer. Within software engineering, we will continue our efforts to assist DoD software developers and maintainers to improve their software processes, measure results, and report ROI based upon improvements. Within software reuse, domain engineering projects will continue to build software models for all DoD domains to maximize reuse in both the MIS and weapons systems domains. We will continue to expand the reuse library through interoperability, thus increasing the number of assets available to DoD users. The Ada program will continue to move out, and we expect to launch Ada9X successfully in March 1995. Dual-use partnership programs will increase the commercial use of Ada. More valuable software will be added to the COTS repository, and we plan to award the first Enterprise License contract before the end of the fiscal year. As we support the I-CASE pilot projects, we will collect and report metrics, and provide technology refreshment to that environment while looking at the future of software engineering environments. The next generation I-CASE environment will be defined and prototyped with Intelligent-SEE. Work will be initiated to integrate repositories and develop interfaces for software developers.

GETTING READY FOR THE FUTURE

	1995	2000	2010
Infrastructure	Information Highway	Super Highway	Intelligent Distribution
Methods	Mega-Programming	Methodology Fusion	User Programming
Tools	I-CASE	Intelligent CASE	Glue Environment
People	Groupware	Society	Computer as an Appliance

Defense Practitioners are looking to DISA/CIM to provide state-of-the-Practice Software Engineering Methods, tools, processes, and services

As we move toward the future, DISA must maintain the leadership role in providing the DoD with the latest proven technologies in software engineering processes, methods, and tools.

We must establish a consistent software project management process within DISA based on the SEI's Capability Maturity Model (CMM). We must invest in software process improvement, training, and in tools that support the process. We must enforce the software management process once established. To be successful, DISA must continue its work in building and managing the DoD software infrastructure. DISA commitment is needed to ensure the Software Program become a high priority and is resourced to accomplish the mission. Software is the key to accomplishing the DoD information management mission.